TIMEX
COMPUTER CORPORATION

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August 11, 1983

Mr. Alphonso Stanonis
Circle Chess Group
P.O. Box 63
Des Plaines, IL 60017

Dear Mr. Stanonis:

Timex, in an association with Texas Wesleyan College, has initiated a program to introduce educators to the educational advantages of using the Timex Personal Computer to promote computer literacy at the grammar, high school, and college levels.

Enclosed is a copy of the TEC newsletter. It provides some basic information pertaining to the concepts behind this excitingly new program.

Further information pertaining to the program can be obtained from Dr. Mark Wasicsko at the college. The appropriate mailing address is listed on the newsletter.

Sincerely,

Paul Schirloff

Paul Schirloff
Consumer/Technical Support

PS:ew

Enclosure

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TEC NEWS

The Timex-Sinclair Educational Computing News

VOL. 1 NO. 1 SPRING 1983

THE TEC NEWS

The Timex Educational Computing News (TEC NEWS) is a quarterly publication designed to acquaint educators with the power and potential of the lowest cost microcomputers available, The Timex - Sinclair Computers, and to serve as a medium through which educators can share ideas and experiences. The TEC News is published by the Educators Users Group in the School of Education at Texas Wesleyan College in cooperation with Timex Computer Corporation.

In this first issue you will find articles that introduce the TS1000 as a low cost educational tool; KIDS KORNER, a section in which students write about their experiences with the TS1000; a LESSONS SECTION, this month featuring programs used to introduce BASIC to 1st graders; a USER SECTION in which we will report on the various ways people have used the Timex computers; and a QUESTION and ANSWER section in which educators' questions about using Timex computers are answered.

The next edition (Fall 83) will feature a report on the summer computer camp project being conducted this summer at Wesleyan using the Timex-Sinclair 1000 and an extensive report on how educators are using the TS 1000.

I hope to make this newsletter a means through which educators interested in low cost computing can share ideas and experiences. So comments, suggestions and articles about your experiences are enthusiastically solicited. Please be sure to write and inform me about how you are using the TS 1000.

One last note, if you would like to continue to receive this newsletter and have not already sent me a note, please do so and I will add you to the permanent mailing list. Also I would appreciate having the information on the sheet at the end of this newsletter. Please send to the address below. I look forward to hearing from you.

M. Mark Wasicsko, Ph.D.
Associate Dean
School of Education
Texas Wesleyan College
Ft. Worth, TX 76105

TIMEX-SINCLAIR 1000 - THE EDUCATORS' COMPUTER

For some reason many educators believe you cannot do "real" computing unless your computer costs thousands of dollars. When I propose the TS1000 as an educational computer, I am met with questions like, "Isn't it only a toy?" or "What can you teach with a computer that costs less than $50?" Only educators who have never used a TS1000 ask such questions! As a matter of fact, the TS1000 may well become THE EDUCATORS' COMPUTER. Following are several factors that make it perfectly suited for educational settings.

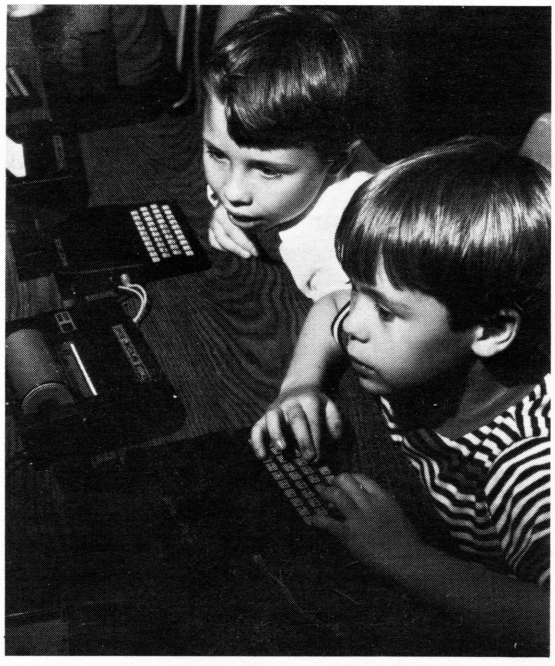
COST - The cost of the TS1000 is probably its biggest educational asset. Computing is not a spectator sport. If you have ever tried to teach 30 students (or teachers) with one or two computers you can certainly appreciate this. But with limited funds and the cost of the most

popular computer systems well over $1000, what can you do? The TS1000, at a list price under $50, goes a long way to remedy this situation. A school can now have a complete 15 station Timex computer laboratory for the price of one or two TRS 80 or Apple II computers and increase the hands-on computer experience 15 times in the process.

DURABILITY - The TS1000 is a tough little computer. It is compact, measuring just 6 3/8 by 6 7/8 by 1 3/8 inches, enclosed in a tough plastic case and has a practically indestructible membrane keyboard. I have seen students drop them, stand on them, and even spill milk on them (not recommended practices!) with no ill effects. Much of its durability is attributed to the simple circuitry and one piece membrane keyboard.

POWER - Don't let the cost and size of the TS1000 fool you. It has the sophistication and power of computers that cost over 20 times as much. It uses a Z80 central processing unit, has an 8K BASIC ROM (Non ASCII but in some ways superior) and comes with 2K RAM (expandable to 64K). Its primary use is for teaching BASIC programming but it can support computer assisted instruction, games, administrative software, business programs and even machine language programming. Not bad for a "TOY!" I have spent over two years learning and teaching with the TS1000 computer and have not yet reached the limit to its teaching potential.

Experts predict that in the next 10 years computers will become as important a teaching tool as chalkboards and textbooks have been for the past 100 years. This, I think, can happen only if educators learn to use low cost computers like the Timex-Sinclair 1000.



THE TIMEX-SINCLAIR 1000 AS A TEACHING TOOL

There are numerous qualities that make the Timex-Sinclair 1000 a superb tool for teaching BASIC programming.

1. One-Touch Keyword Entry - Most computers require keywords to be spelled out repeatedly. For example, the keyword PRINT usually requires five key strokes. But with the TS1000 keywords are spelled by touching only one key (usually the first letter of the keyword). This is a tremendous time saver and can be especially useful to young programmers. More time can be spent programming rather than spelling (or misspelling) keywords.

2. Syntax Checking - There are few things as frustrating as spending hours writing and entering a program only to find numerous syntax errors throughout. The TS1000 eliminates most of these errors by checking each line for syntax errors before they can be ENTERed. For example, if you attempt to ENTER 10 PRINT "HELLO , the computer would place a /S/ after HELLO, telling you that you left out the trailing quote mark. The line cannot be entered until the syntax error is corrected. This saves a lot of time and frustration tracking down errors.

3. Automatic Sequenced Listing - On the TS1000 program lines are entered on the bottom two lines of the screen. When finished, and assuming no syntax errors, you press ENTER and the line is automatically displayed in proper numeric sequence in the listing at the top of the screen. There is never a need to reLIST a program to place line numbers in sequence. It is a small thing but can be of tremendous help to students learning to program.

4. String and Array Saving - This is one of the most outstanding features of the TS1000. With most computers, data in strings and arrays are not saved when a program is SAVEd (you must open special files to hold such data). The TS1000, however, stores ALL information in the computer's RAM, including strings, arrays, and system variables, when a SAVE is executed. Hence there is no need to load data from other files each time you use a program. This greatly increases the effective use of strings and arrays in programs.

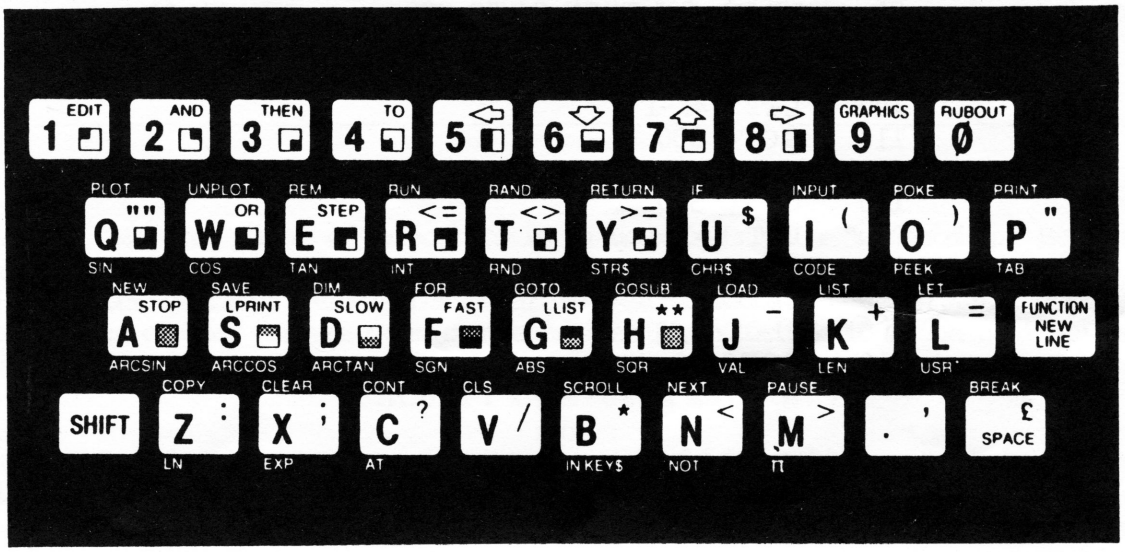
5. One Step Editing - Programmers seldom enter programs perfectly the first time, so editing capabilities are important. The TS1000 has one of the best editing abilities I have seen. To edit a line you move the line cursor to the desired line (LIST line number) and then press the EDIT key (Shift 1). A copy of the line moves to the bottom of the screen and desired changes can be made using arrow keys and delete. When changes are completed, press ENTER and the edited line replaces the old line. This is much easier than retyping lines or going through the more elaborate editing procedures on most other computers.

6. Keyboard Graphics - Graphic characters and symbols on the TS1000 may be produced directly from the keyboard (no SET or POKE needed). This provides for easy graphics, animation and program enhancement. Graphics capacity is especially important as a motivational technique with young programmers who enjoy producing graphic displays and games.

7. Math and Scientific Functions - All mathematical and scientific functions (sine, cosine, random numbers, etc.) are directly accessible from the keyboard and, like keywords, are produced by one keystroke. If used skillfully, this little computer can become an entire math course (K-12) where each concept and function can be demonstrated graphically and mathematically. All this for a bit more than the price of a math textbook!

8. 2K RAM - Is 2K of memory an educational asset? In my opinion - YES! People who learn to program using only 2K of RAM become more efficient programmers. They learn to use loops and subroutines to perform repeated functions and acquire a much greater understanding of programming algorithms. I am always amazed to see what a well written 2K program can do, and once a person is an efficient 2K programmer you can add another 16 to 64K.

9. Friendly Keyboard - The 40 key membrane keyboard is well suited for teaching. Students love it because of its size (pictured about 1/2 size below), because all letters, graphics and functions are readily visible and because you do not need to touch type to enter programs quickly. Every key can produce a keyword, letter, symbol, graphic character, inverse letter and function. While at first glance it may look complicated, once the system is mastered, programming is speeded up considerably. Be aware, however, that you will quickly become spoiled by this keyboard system. It makes other computers' entry systems seem cumbersome.



10. Transferability - The BASIC on the TS1000 transfers easily to other computers. The major difference is the lack of READ-DATA statements on the TS1000 (more than compensated for by the string and array saving capability). Minor differences can be expected in PRINT AT, GOTO, and RND statements. Overall, people who learn TS BASIC will have few difficulties switching to other computers (e.g., TRS 80, Apple, etc.).

Add these to the cost, dependability and power factors and, in my opinion, you have a computer perfectly suited for teaching BASIC.

KIDS' KORNER

In each issue we will provide the opportunity for students to write about their experiences with the TS1000. Please encourage your students to do so.

GETTING STARTED

by Lorie Floyd
7th Grade Student
Handley Middle School
Fort Worth, Texas

I have learned quite a bit about computers by using the Timex Sinclair 1000. It is my first home computer, but I have used other computers.

I first learned about computers when I sat in on my father's computer science class during half of the summer. After that I became very interested in computers. When I heard about the computers class at my school I thought that it might be very enjoyable. My father bought the TS1000 about one week after I started the class. I have had it for about five months.

When I first started using the TS1000, I used programs out of the manual. Then I began writing some of my own like number games and graphics. One program I found fun to play is a program which lets you make an outline of a square and fill it in. You use "1" to move left, "2" to move up, "3" to move down, and "4" to move right. Here is the program. Try it out!

```
10    LET  X=31
20    LET Y=21
30    PLOT X,Y
40    LET A$= INKEY$
50    IF A$= "1" THEN GOTO 100
60    IF A$= "2" THEN GOTO 150
70    IF A$= "3" THEN GOTO 200
80    IF A$= "4" THEN GOTO 250
90    GOTO 40
100   LET X=X-1
110   GOTO 300
150   LET Y=Y+1
160   GOTO 300
200   LET Y=Y-1
210   GOTO 300
250   LET X=X+1
300   PLOT X,Y
310   GOTO 40
```

LESSONS FOR TEACHERS

In each issue we will present lessons or mini-lessons designed to teach specific concepts to particular age group students. Here are some programs that are used to acquaint 1st grade students with the computer and BASIC programming.

Teaching BASIC to 1st Graders

Lu Nell Barnett
1st Grade Montessori Teacher
Moore Elementary School
Ft. Worth, Texas

After taking a graduate course "Microcomputers in Education," I decided that my first graders needed to become computer literate. I started by teaching about computers - terms, how they work, what they can be used for - but soon realized that really learning about computers involves working with computers. Like many schools mine did not have a computer budget so I purchased a TS1000 with my own funds. It was an instant success with the students (and later with parents as well). Within a short period of time all students were working on the computer. Parents began to ask if their children were really working on computers and became interested enough to contribute money for additional computers, printers, and TVs. All students are now familiar with and comfortable with using computers and many have begun writing programs of their own. I am amazed to see what first grade students can do with computers!

The programs that follow were used to introduce simple BASIC concepts. Students were also encouraged to enter short programs from several of the numerous books available for the TS1000.

PROGRAM 1

```
10 PRINT "YOUR NAME"
   <ENTER>
20 GOTO 10
   <ENTER>
   RUN
   <ENTER>
```

PROGRAM 2

```
10 SCROLL
   <ENTER>
20 PRINT "I LOVE SCHOOL"
   <ENTER>
30 GOTO 10
   <ENTER>
   RUN
   <ENTER>
```

PROGRAM 3

```
10 FOR R=1 TO 100
20 SCROLL
30 PRINT R
40 NEXT R
```

PROGRAM 4

```
10 PRINT "I CAN COUNT BY 2."
20 LET A = 0
30 LET A = A + 2
40 PRINT A
50 SCROLL
60 GOTO 30
```

USER SECTION: COMPUTING ON A SHOESTRING BUDGET

It seems that the plight of educators is to do things on a "shoestring." But the advent of inexpensive computers sheds a whole new light on what can reasonably be accomplished in the area of computer literacy. Here are some areas well suited for the TS1000. I hope you will send me a description of how you use your computer(s) so I can include it in the next newsletter.

FACULTY COMPUTER LITERACY

Bringing computer literacy to a faculty is (or should be) a high priority in most schools. Here at Wesleyan numerous faculty expressed an interest in learning BASIC programming. After many unsuccessful attempts to arrange instructional and laboratory time that fit individual schedules, we

decided to provide faculty with a computer for home use. Fifteen faculty take part in this project each term and are given a TS1000 computer to use for one semester. Participants agree to use the computer for a minimum of three hours per week and to attend weekly one hour seminars during which experiences are shared, problems discussed, and techniques of programming are presented.

To date thirty faculty have been involved in the program. Over 70% of past participants have continued their computer involvement either by purchasing computers or continuing at campus computer facilities. This is a marked improvement over other attempts to bring computer literacy to faculty.

Probably the most unique part of this program is that the one time cost to initiate the ongoing project was $1500.00.

BUDGET:

15 TS1000 Computers ($49.95ea)	$ 749.25
5 Cassette Recorders ($35 ea)	175.00
1 Timex Printer	99.95
Software/Books/Magazines	400.00
TOTAL	$1424.20

TS1000 LENDING LIBRARY

Many students and teachers find it difficult to schedule enough "hands-on" time in computer laboratories. To help them learn BASIC (part of our computer literacy courses) we have established a computer lending library through which TS1000s can be checked out for a two week period.

TEACHER INSERVICE

Many teachers have realized a need to know computer programming, but find that the time to spend in a computer lab is a problem. To accommodate teachers, we provide a 12 hour inservice using the TS1000. Teachers are given (or purchase) a TS1000 and attend 6 weekly sessions. Class time is spent learning programming principles, discussing problems and giving assignments which are to be completed at home on the TS 1000. With this setup teachers can spend as much time as they need on assignments IN THE COMFORT OF THEIR OWN HOMES. By having the computer at home, I estimate they are getting more than TEN TIMES the hands-on computer experience they would get in the regular computer lab. Thus a 12 hour inservice would be equivalent to a 100 hour class/lab.

SUMMER COMPUTER CAMPS

This summer an experimental, pilot computer camp project will take place at Wesleyan. The camp, co-sponsored by Timex Computer Corporation, is designed to provide a laboratory setting for elementary and middle grades teachers who are learning to implement computer programs in their schools. The program focuses on the use of inexpensive computers in educational settings in order to maximize "hands-on" computer experiences of students. Hence, in our camp, every student will not only use computers at the camp but will be given a computer to keep at home for their personal use. This approach should significantly increase usage and, ultimately, computer literacy. Upon completion of the camp, teachers will possess the necessary skills to implement computer literacy and summer camp programs in their schools.

Students will be involved in classroom and laboratory experiences covering topics like computer terminology, history of computers, how computers work, computer applications, careers in computer fields, programming computers and ethical issues involving computer usage. Other activities include field trips, recreation, programming contests and a computer fair. Upon

completion of the camp students will have a knowledge of BASIC programming and an understanding of the role of computers in a modern society. A detailed report on the computer camp will appear in the Fall issue of the TEC NEWS.

A COMPUTER LAB FOR $2500!

What would you say if I told you you could have a computer laboratory equipped to teach BASIC programming to 30 students for $2500.00? It is possible with the TS1000. Here is what you need:

15 Timex Sinclair 1000 Computers @ $49.95 You have heard the expression, "Two heads are better than one." My experience indicates that two students per computer has many advantages. With this arrangement students teach each other and can answer many of the simple problems encountered in learning programming.

15 B/W TVs @ $50.00 Nearly any inexpensive TV will work well with the TS1000. However, I recommend that you try a TV before you buy. Hook up several computers in close proximity to be sure you do not get excessive interference.

8 Cassette Recorders @ $40.00 I would use one recorder for each two computers. All you need to do to change computers is exchange two plugs, something even the youngest user can do quite easily. Be sure to use an approved recorder or one made for data recording.

8 16K RAM Packs @ $39.95 Most beginners will not need more than 2K of memory, but you should have additional RAM for advanced programmers and to run educational software.

2 Timex 2040 Printers @ $99.95 Students need hard copies of programs and screen displays. The Timex printer handles this at a very reasonable price.

Books/Magazines/Software at $175 I recommend that you start a library of books, magazines and software to support your computer. There are entire magazines devoted to Timex computers and the number of software manufacturers is booming.

QUESTIONS & ANSWERS

In each issue I will attempt to answer some of the most commonly asked questions by educators using Timex computers. If you have questions send them to me at the address on page one.

Is Timex going to produce other computers? If you think the TS1000 is something wait until Fall when two new computers will be introduced. The TS1500 will be a modified 1000 with full size keyboard, 16k internal RAM and should list for $99.95. The second computer will be a color computer with 16 or 48K RAM (list 149.95 and 199.95), full size keyboard with space bar, color graphics, sound, cartridge slot, joy stick slots and much more. Also a disk drive and modem will soon be available. It looks to me like the price of these computers should make them very appealing to educators.

What about educational software and support materials for Timex computers? Timex is developing educational software. I would expect to see it as soon as the new computers hit the market. There are also numerous software companies dedicated solely to materials for the Timex computers. While much of their offerings consist of games, some have high quality educational software (and all are looking for more). By the end of summer I will have evaluated much of the educational software available so the next newsletter will contain some evaluations. Two companies that have been most helpful in providing software for evaluation are Softsync, Inc.,P.O.Box 480, Murray Hill Station, NY, NY 10156 and 2-Bit Software, 13674 Boquita Drive, Del Mar, CA 92014. Write them for their catalogs. There are also two magazines devoted to Timex-Sinclair users: SYNC, CN 1986, Morristown, NJ 07960 and the new Timex Sinclair User, 49 La Salle Ave.,Buffalo, NY 14217. These provide articles of general interest, hardware and software reviews, computer projects and articles to aid in learning programming.

USER GROUP INFORMATION

In order to make this newsletter most useful to educators, I would like to have the following information. Please send it to the address on page 1. Thank you.

NAME:_____ OCCUPATION:_____
ADDRESS (for mailing list):_____
CITY:_____ STATE:_____ ZIP:_____
SCHOOL:_____ LEVEL:_____
WHAT KIND OF COMPUTER(S) DO YOU USE AND HOW MANY OF EACH?_____

WHAT QUESTIONS DO YOU HAVE ABOUT EDUCATIONAL USES OF TIMEX COMPUTERS?_____

WHAT TOPICS WOULD YOU LIKE TO SEE COVERED IN FUTURE TEC NEWS ISSUES?_____

HOW ARE YOU CURRENTLY USING TIMEX COMPUTERS IN EDUCATIONAL SETTINGS?_____

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